

REMARKS

The present filing is responsive to the office action.

Summary of the Response

Claims 1, 3, 7, 12, 13, 15 and 19 has been amended. Claims 1-20 remain pending in this application. Reexamination and reconsideration of the present application as amended are respectfully requested.

The Invention

The recited invention is directed to an interface mechanism in a bio-separation instrument which provides a quick connect interface to an interchangeable multi-channel cartridge. By nature of an interchangeable cartridge, it is removable and replaceable in relation to the interface mechanism. One aspect of the present invention provides an interface mechanism (i.e., a quick connection) that precisely positions the interchangeable cartridge in relation to the support elements (e.g., electrical power such as high-voltage, gas pressure, incident radiation and detection optics) provided by the supporting instrument, and makes automated, reliable and secured alignments and connections between various components in the cartridge and the support elements in the instrument. Such alignments and connections are reliably implemented, in a reliable automated sequence, after the interchangeable cartridge had been securely received by the interface mechanism. In another aspect of the present invention, the interface mechanism comprises pneumatically or electro-mechanically driven actuators for engaging structures on the cartridge, to securely connect at least one of gas pressure, high voltage, emission detection optics, and excitation radiation optics. In one embodiment, the pneumatically driven actuators

comprise gas driven pistons. After the interchangeable cartridge has been securely received by the interface mechanism, the connection sequence is initiated. In one embodiment, the connection sequence is initiated by a user. Alternatively, the connection sequence may be initiated automatically in response to a secured reception of the removable cartridge to the interface mechanism. A disconnection sequence is provided to disconnect the support elements from the cartridge, allowing the cartridge to be safely removed from the instrument. In a further aspect of the present invention, the interface provides separate high voltage and optical connections for each separation channel in the cartridge, thus providing channel-to-channel isolation from cross talk both electrically and optically.

Claim Rejections Under 35 USC 112, Second Paragraph

Concerning the recitation of "at least an associated component" is vague and unclear. Applicant respectfully submits that the recited "associated component" refers to a designated component or part of the capillary cartridge, as is clearly supported and explained in the specification. See, for example, page 18, lines 5+ in the specification, wherein it is explained that external components (which are components that provide to the capillary cartridge support elements such as power, radiation, etc., required by a bio-analytical process; such as high voltage anode contacts 304 and excitation source 188) are biases against associated components of the capillary cartridge (such as common electrode 134 through anode contact ports 306 on the capillary cartridge, and the optics mating conical seats 186 in the cartridge). References to associated components of the capillary cartridge have been consistently made throughout the specification. Accordingly, the recitation of associated components in claim 1 is not vague and

unclear, given that the claim should be construed in light of the specification under the circumstance.

Concerning the recitations of "makes available" and "associated", the issue with "associated" has been addressed above. Applicant does not understand how such recitations are deemed vague and unclear as to not show a defined structured relationship. Nonetheless, Applicant replaced the recitation of "makes available" with the recitation of "provides to capillary cartridge" throughout the claims, to more clearly define the relationship of the external component and the capillary cartridge. When the claims are read in light of the specification, it is clear that the external component (e.g., high voltage anode contact and excitation source) provides to the capillary cartridge a support element for bio-analysis (e.g., high voltage and excitation radiation) to the associated component of the capillary cartridge (e.g., common electrode and optics mating conical seats in the cartridge). Further, independent claim 19 has been amended to replace "associated component" of capillary cartridge with "designated component" of capillary cartridge.

Concerning the recitation of "support element" and "support structure", as consistently used in the specification, "support element" consistently refers to elements required to conduct the bio-analytical process (i.e., to support the process), such as electrical power such as high-voltage, gas pressure, incident radiation and detection optics. See, for example, page 4, line 7 in the specification, and throughout the specification. Further, "support structure" refers to the structure of the interface mechanism that supports the cartridge (e.g., front and rear support blocks 360 and 363, support frame 164 (Figs. 22 and 26), etc.), as explained in detail in the specification.

Accordingly, the 112 rejections have been overcome.

Applicant notes that the amendments to the claims are non-substantive. Accordingly, should the Examiner substantive reject the claims based on new prior art grounds in the next action, such action should not be made final.

Claim Rejections Under 35 USC 102(e)

Claims 1-20 are rejected under 35 USC 102(e) as being anticipated by Hedberg (US20020092770). This rejection is respectfully traversed.

On the outset, Applicant notes that given the traversal of the rejection below, Applicant has not yet considered the option of swearing behind the 102(e) reference, but reserves the right to do so at a late time should the need arise.

Independent claims 1 and 19 require a support structure that supports both the capillary cartridge and the biasing device, wherein the biasing device supports and biases the external component against the cartridge. In the context of the present application, biasing device refers to a structure that can exert an interaction between the external component and the cartridge, wherein such action allows for engagement and disengagement of the cartridge as desired, which is different from a structure in which the components are merely assembled together. As explained in the specification, the biasing device allows the cartridge to be inserted in the support structure and then the biasing device would bias the external components against the cartridge, or the cartridge to be removed after the biasing device disengages the external components from the cartridge.

Hedberg does not refer to a support structure that supports both a cartridge and a biasing device, and further wherein the biasing device supports and biases the external component against the cartridge, wherein the external component provides to the cartridge a support

element required by a bio-analytical process. Instead, Hedberg discloses a CE detector module 26 that is transportable by a robotic arm to access samples in fixed containers. As such no external components in Hedberg would be biased against the capillary 108, 109 held in the detector module 26 (see Fig. 7A). The components in Hedberg are assembled together, which would not require a biasing interaction between any cartridge and an external component. The dependent claims further recite more specific structures for the biasing device.

Specifically, referring to Fig. 1C in Hedberg, the Examiner refers to item 18 to correspond to the recited support structure, item 20 to correspond to the recited external component, item 34 to correspond to the recited biasing device, item 130 to correspond to the recited associated component of the capillary cartridge, and item 26 to correspond to the recited support element. The Examiner however did not identify a specific item in Hedberg which corresponds to the recited capillary cartridge. Using the items in Hedberg referenced by the Examiner, they would not correspond to the recited structural relationship between the recited parts in the claims.

Accordingly, independent claims 1 and 19, and all dependent claims are not anticipated by Hedberg. The dependent claims add further limitations that further distinguish from Hedberg. For example, claim 7 recites the capillary cartridge is interchangeable and removably supported by the support structure, and wherein the biasing device is structured to removably bias the external component against the associated component of the capillary cartridge to provide a quick connection. The recited combinations of structures and structural interactions are not found in Hedberg.

Should the Examiner maintain the rejection, the Examiner must specifically identify the structures (and the structural interactions) in Hedberg which are deemed to correspond to the

structures (and structural interactions) recited in the claims of the present application. In the absence of corresponding structures in Hedberg, the rejection must be withdrawn.

CONCLUSION

The Examiner is invited to call the undersigned representative to discuss any outstanding issues that may not have been adequately addressed in this response.

The Assistant Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required by this transmittal and associated documents, or to credit any overpayment to Deposit Account No. 501288 referencing the attorney docket number of this application.

Respectfully submitted,

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